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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/264,577	03/08/99	BORYS S	CASE-NO-1C

IM52/0208

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EXAMINER	
WYSZOMIERSKI,G	
ART UNIT	**PAPER NUMBER**
1742	7

DATE MAILED: 02/08/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.	Applicant(s)
09/264577	ARMSTRONG et al
Examiner	**Group Art Unit**
WYSZOMIERSKI	1742

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

Period for Response

A SHORTENED STATUTORY PERIOD FOR RESPONSE IS SET TO EXPIRE Three (3) MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a response be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for response specified above is less than thirty (30) days, a response within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for response is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication .
- Failure to respond within the set or extended period for response will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

☒ Responsive to communication(s) filed on 12/5/00 and 12/11/00.

☒ This action is **FINAL.**

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 1 1; 453 O.G. 213.

Disposition of Claims

☒ Claim(s) 1-21 is/are pending in the application.

Of the above claim(s)_____ is/are withdrawn from consideration.

☐ Claim(s)_____ is/are allowed.

☒ Claim(s) 1-21 is/are rejected.

☐ Claim(s)_____ is/are objected to.

☐ Claim(s)_____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The proposed drawing correction, filed on_____ is ☐ approved ☐ disapproved.

☐ The drawing(s) filed on_____ is/are objected to by the Examiner.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 11 9(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number)_____.

☐ received in this national stage application from the International Bureau (PCT Rule 1 7.2(a)).

*Certified copies not received:_____.

Attachment(s)

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 4

☐ Interview Summary, PTO-413

☐ Notice of References Cited, PTO-892

☐ Notice of Informal Patent Application, PTO-152

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Other_____

Office Action Summary

1. The new oath or declaration filed February 5, 2000 has been received. This application will be forwarded to application branch in order to correct the inventorship and issue a new filing receipt.

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 9, 11, 13, 15, 16, and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Homme '017. Homme discloses reacting $TiCl_4$ vapor with molten sodium to form titanium and NaCl and other products, and separating the titanium from the salt and other products. The inert gas of claim 17 is disclosed at Homme column 5, line 39. Thus, the Homme disclosure fully meets the limitations of the process as defined by the instant claims.

4. Claims 9, 11, and 13-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Worthington '931. Worthington similarly discloses reacting $TiCl_4$ vapor with molten sodium to form titanium and reaction products, and separating the titanium from the other products. The

temperatures disclosed in Worthington are all considerably below the sintering temperature of titanium. Thus, Worthington fully discloses all limitations of the instant claims.

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1-7, 12, 14, 18, 19, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Homme.

The Homme patent is described in item no. 3 supra. With respect to new claim 21, Homme does not specifically state producing titanium "continuously", but the examiner submits that the production of titanium would in fact occur in a continuous manner in the Homme patent as long as a sufficient amount of reactants are fed into the reaction vessel of Homme. Homme does not specify that the liquid alkali (sodium) reductant is present in excess of the stoichiometric amount, does not specify a temperature below the sintering temperature, and does not specify the sonic flow or sonic velocity limitations of instant claims 3 and 5. These differences are not seen as resulting in a patentable distinction between the prior art process and that of the instant claims because:

a) Homme states that the amount of titanium metal formed is preferably equal to the amount consumed from the chloride; thus one of skill in the art would conclude that sufficient reductant is present to allow substantially complete reaction, i.e. at least a stoichiometric amount, and most likely an amount in excess of stoichiometric, of reductant is present. Further, the examiner submits that one of ordinary skill in the art would desire an excess amount of sodium in order to insure complete reduction of the chloride.

b) The sintering temperature of titanium is in the range of about 1000°C, and nothing in the prior art would indicate that such a temperature is ever present in Homme. Indeed, the highest temperature ever disclosed by Homme is 800-850°C.

c) Performing the Homme process while supplying the chloride vapor at a sonic flow velocity would fall within the purview of what is disclosed in the prior art.

Consequently, the Homme disclosure is held to create a prima facie case of obviousness of the presently claimed invention.

7. Claims 1-7, 12, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Worthington.

Worthington, described in item no. 4 supra, does not disclose the excess stoichiometry or sonic flow limitations of the instant claims, and does not specify producing titanium "continuously" as required by new claim 21. However,

a) Worthington column 3, lines 9-12 indicate that relative portions of the chloride and sodium are not critical and, while stating that stoichiometric amounts are most suitable, indicates that an excess of sodium may be present. Further, the examiner submits that one of ordinary skill in the art would desire to have a reactant present in an excess amount in a given chemical reaction in order to insure complete reduction, i.e. to avoid the possibility of an incomplete reaction.

b) Performing the Worthington process while supplying the chloride vapor at a sonic flow velocity would fall within the purview of what is disclosed in the prior art.

c) The examiner submits that the production of titanium would in fact occur in a continuous manner in the Worthington patent as long as a sufficient amount of reactants are fed into the reaction vessel therein.

Consequently, the Worthington disclosure is held to create a prima facie case of obviousness of the presently claimed invention.

8. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Homme or Worthington, either of which in view of Evans '420.

The Evans patent indicates the conventionality in the art of obtaining titanium metal by a distillation process subsequent to the reduction of the metal from its chloride, i.e. subsequent to a process as disclosed by Homme or Worthington. Therefore, the disclosure of Evans, when combined with that of Homme or Worthington, would have taught the presently claimed invention to a person having ordinary skill in the art.

9. In a response filed December 5, 2000, Applicant alleges that the Homme and Worthington disclosures should not be applied against the instant claims because the present invention involves introducing the halide gas below the surface of a liquid reducing metal and/or submerged in the liquid metal. Applicant's arguments have been considered, but are not persuasive of patentability because the only limitations in the instant claims regarding the location of the halide vapor are that the vapor is introduced into a continuum of the liquid metal, and the claims are not specific to introducing the vapor below the surface or submerged in the liquid metal.

10. The terminal disclaimer filed on December 11, 2000 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of Applicant's prior patents has been reviewed and is accepted. The terminal disclaimer has been recorded.

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to George Wyszomierski whose telephone number is (703) 308-2531. The examiner can normally be reached on Monday thru Friday from 8:00 a.m. to 4:30 p.m. Eastern time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King, can be reached on (703) 308-1146. The fax phone number for this Group is (703) 305-7719. The Right fax number for this examiner is (703) 872-9039. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0661.

GEORGE WYSZOMIERSKI
PRIMARY EXAMINER

GPW
February 7, 2001